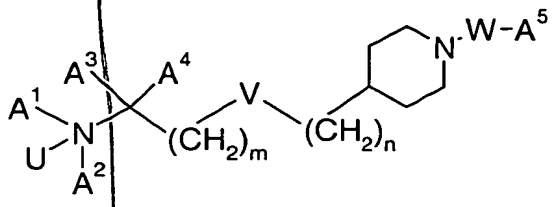
Claims

1. A compound selected from the group consisting of compounds of formula (I)



(I)

wherein

U is O or a lone pair;

V is O, $-CH_2-$, -CH=CH-, or -C≡C-;

m and n are each integers from 0 to 7 and m+n is 0 to 7;

W is CO, COO, $CONR^1$, CSO, $CSNR^1$, SO_2, or SO_2NR^1, with the provisos that:

a) V is not $-CH_2-$ when W is CO,

b) m+n is 1 or 2 when V is $-CH_2-$ and W is SO_2,

c) m=n=0 when V is -CH=CH- and W is CO or SO_2,

d) m is 1 to 7 when V is O, and

e) m is 1 to 3 when V is O, W is CO or SO_2, and n is 0;

A^1 is H, lower-alkyl or lower-alkenyl,

A^2 is cycloalkyl, cycloalkyl-lower-alkyl, lower-alkenyl, lower-alkynyl or lower-alkyl optionally substituted with hydroxy, lower-alkoxy or lower-alkoxy-carbonyl, or

A^1 and A^2 bond together to form $-A^1-A^2-$, wherein $-A^1-A^2-$ is lower-alkylene or lower-alkenylene, optionally substituted by R^2, and one $-CH_2-$ group of $-A^1-A^2-$ is optionally replaced by NR^3, S, or O;

A^3 and A^4 are independently hydrogen or lower-alkyl;

A^5 is lower-alkyl optionally substituted with halogen, lower-alkenyl, lower-alkoxy-carbonyl-lower-alkyl, cycloalkyl, cycloalkyl-lower-alkyl, aryl, aryl-lower-alkyl, heteroaryl, or heteroaryl-lower-alkyl;

R^2 is lower-alkyl, hydroxy, hydroxy-lower-alkyl, or $N(R^4,R^5)$;

R^1, R^3, R^4 and R^5 are independently hydrogen or lower-alkyl; and

When A^1 is not bonded to A^2, A^1 and A^3 optionally bond together to form $-A^1-A^3-$, wherein $-A^1-A^3-$ is lower-alkylene or lower-alkenylene, optionally substituted by R^2, and one $-CH_2-$ group of $-A^1-A^3-$ is optionally replaced by NR^3, S, or O;

pharmaceutically acceptable salts of the compounds of formula (I), and

pharmaceutically acceptable esters of the compounds of formula (I).

2. The compound according to claim 1, wherein U is a lone pair.

3. The compound according to claim 2, wherein V is O.

4. The compound according to claim 2, wherein V is -C≡C-.

5. The compound according to claim 2, wherein V is $-CH_2-$.

6. The compound according to claim 2, wherein W is CO, COO, CONH, SO_2, or SO_2NH.

7. The compound according to claim 6, wherein W is CO, COO, or SO_2NH.

8. The compound according to claim 6, wherein W is SO_2.

9. The compound according to claim 6, wherein W is CO.

10. The compound according to claim 2, wherein n is 0 to 2.

11. The compound according to claim 10, wherein n is 0.

12. The compound according to claim 2, wherein m is 1 to 5.

13. The compound according to claim 2, wherein m is 0 to 2.

14. The compound according to claim 2, wherein A^1 is methyl, ethyl or 2-propenyl.

15. The compound according to claim 14, wherein A^2 is methyl, n-propyl, i-propyl, n-butyl, 2-propenyl, 2-propinyl, cyclopropyl, cyclohexyl, cyclopropyl-methylene; or ethyl optionally substituted with hydroxy, methoxy, or ethoxycarbonyl.

16. The compound according to claim 15, wherein A^2 is n-propyl, 2-hydroxy-ethyl, 2-methoxy-ethyl, 2-propenyl, or cyclopropyl.

17. The compound according to claim 2, wherein A^1 and A^2 are bonded together to form -A^1-A^2-, wherein R^2 is lower-alkyl, hydroxy, hydroxy-lower-alykl, or N(lower-alkyl)$_2$, and R^3 is lower-alkyl.

18. The compound according to claim 17, wherein R^2 is methyl, hydroxy, 2-hydroxy-ethyl, or $N(CH_3)_2$, and R^3 is methyl.

19. The compound according to claim 2, wherein A^3 is hydrogen.

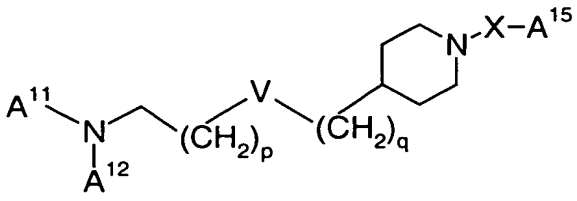
20. The compound according to claims 19, wherein A^4 is hydrogen.

21. The compound according to claim 2, wherein A^5 is lower-alkyl optionally substituted by 1 to 3 substituents selected from the group consisting of fluorine and chlorine; lower-alkenyl, cycloalkyl, cycloalkyl-lower-alkyl, lower-alkoxy-carbonyl-lower-alkyl, naphthyl, furyl-methylene; or phenyl, benzyl or phenyl-ethylene, optionally substituted by 1 to 3 substituents selected from the group consisting of fluorine, chlorine, bromine, CN, CF_3, NO_2, lower-alkyl, lower-alkoxy, thio-lower-alkoxy, lower-alkyl-carbonyl, lower-alkoxy-carbonyl, and dioxo-lower-alkylene.

22. The compound according to claim 21, wherein A^5 is lower-alkyl, cycloalkyl-lower-alkyl; or phenyl or benzyl optionally substituted by 1 to 3 substituents selected from the group consisting of fluorine, chlorine, bromine, and CF_3.

23. The compound according to claim 22, wherein A^5 is n-butyl, i-butyl, cyclohexyl-methylene, phenyl, 4-chloro-phenyl, 4-bromo-phenyl, 2,5-difluoro-phenyl, 3,4-difluoro-phenyl, 4-trifluoromethyl-phenyl, or 4-chloro-benzyl.

24. A compound selected from the group consisting of compounds of formula (Ia)



(Ia)

wherein

V is O, $-CH_2-$, -CH=CH-, or $-C\equiv C-$;

p is an integer from 0 to 5;

q 0, 1 or 2;

X is CO, COO, SO_2, or SO_2NH, with the provisos that:

a) V is not $-CH_2-$ when X is CO,

b) p+q is 1 or 2 when V is $-CH_2-$ and X is SO_2,

c) p=q=0 when V is -CH=CH- and X is CO or SO_2,

d) p is 1 to 5 when V is O, and

e) p is 1 to 3 when V is O, X is CO or SO_2, and q is 0;

A^{11} is methyl or ethyl;

A^{12} is cyclopropyl, lower-alkenyl, or lower-alkyl optionally substituted with hydroxy or lower-alkoxy; and

A^{15} is lower-alkyl optionally substituted with halogen, lower-alkenyl, lower-alkoxy-carbonyl-lower-alkyl, cycloalkyl, cycloalkyl-lower-alkyl, aryl, aryl-lower-alkyl, heteroaryl, or heteroaryl-lower-alkyl;

pharmaceutically acceptable salts of the compounds of formula (Ia), and

pharmaceutically acceptable esters of the compounds of formula (Ia).

25. The compound of claim 24, wherein A^{12} is cyclopropyl, lower alkenyl of 2 to 4 carbon atoms, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon atoms or a lower alkyl substituted with a lower-alkoxy having a total of 2 to 4 carbon atoms.

26. The compound of claim 25, wherein A^{15} is lower alkyl, cycloalkyl, cycloalkyl-lower alkyl, aryl or aryl-lower-alkyl.

27. The compound of claim 26, wherein V is O.

28. The compound of claim 27, wherein X is CO.

29. The compound of claim 28, wherein n is 0.

30. The compound of claim 29, selected from the group consisting of {4-[4-(allyl-methyl-amino)-butoxy]-piperidin-1-yl}-(4-chloro-phenyl)-methanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

31. The compound of claim 28, wherein n is 1.

32. The compound of claim 31, selected from the group consisting of {4-[4-(allyl-methyl-amino)-butoxymethyl]-piperidin-1-yl}-(4-chloro-phenyl)-methanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

33. The compound of claim 31, selected from the group consisting of {4-[3-(allyl-methyl-amino)-propoxymethyl]-piperidin-1-yl}-(4-chloro-phenyl)-methanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

34. The compound of claim 28, wherein n is 2.

35. The compound of claim 34, selected from the group consisting of 1-(4-{2-[4-(allyl-methyl-amino)-butoxy]-ethyl}-piperidin-1-yl)-2-(4-chloro-phenyl)-ethanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

36. The compound of claim 34, selected from the group consisting of (4-{2-[4-(allyl-methyl-amino)-butoxy]-ethyl}-piperidin-1-yl)-(4-chloro-phenyl)-methanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

37. The compound of claim 34, selected from the group consisting of (4-{2-[2-(allyl-methyl-amino)-ethoxy]-ethyl}-piperidin-1-yl)-(4-chloro-phenyl)-methanone, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

38. The compound of claim 27, wherein X is COO.

39. The compound of claim 38, selected from the group consisting of 4-{3-[ethyl-(2-hydroxy-ethyl)-amino]-propoxymethyl}-piperidine-1-carboxylic acid 4-chloro-phenyl

ester, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

40. The compound of claim 38, selected from the group consisting of 4-[4-(allyl-methyl-amino)-butoxymethyl]-piperidine-1-carboxylic acid 4-chloro-phenyl ester, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

41. The compound of claim 38, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-carboxylic acid isobutyl ester, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

42. The compound of claim 27, wherein X is SO_2.

43. The compound of claim 42, selected from the group consisting of allyl-{4-[1-(4-chloro-benzenesulfonyl)-piperidin-4-yloxy]-butyl}-methyl-amine, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

44. The compound of claim 42, selected from the group consisting of allyl-{3-[1-(4-bromo-benzenesulfonyl)-piperidin-4-yloxy]-propyl}-methyl-amine, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

45. The compound of claim 27, wherein X is SO_2NH.

46. The compound of claim 45, wherein A^{15} is lower alkyl.

47. The compound of claim 46, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid butylamide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

48. The compound of claim 45, wherein A^{15} is cylcloalkyl-lower alkyl.

49. The compound of claim 48, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid cyclohexylmethyl-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

50. The compound of claim 45, wherein A^{15} is phenyl.

51. The compound of claim 50, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

52. The compound of claim 45, wherein A^{15} is phenyl substituted with at least one halogen.

53. The compound of claim 52, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (4-chloro-phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

54. The compound of claim 52, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (4-bromo-phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

55. The compound of claim 52, selected from the group consisting of 4-[6-(cyclopropyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (3,4-difluoro-phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

56. The compound of claim 52, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (2,5-difluoro-phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

57. The compound of claim 45, wherein A^{15} is phenyl substituted with trifluoromethyl.

58. The compound of claim 57, selected from the group consisting of 4-[6-(allyl-methyl-amino)-hexyloxy]-piperidine-1-sulfonic acid (4-trifluoromethyl-phenyl)-amide, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

59. The compound of claim 26, wherein V is S.

60. The compound of claim 26, wherein V is $-CH_2-$.

61. The compound of claim 60, selected from the group consisting of methyl-propyl-{4-[1-(4-trifluoromethyl-benzenesulfonyl)-piperidin-4-yl]-butyl}-amine, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

62. The compound of claim 26, wherein V is -CH=CH-.

63. The compound of claim 26, wherein V is -C≡C-.

64. The compound of claim 63, wherein X is CO.

65. The compound of claim 64, selected from the group consisting of (4-chloro-phenyl)-{4-[4-(methyl-propyl-amino)-but-1-ynyl]-piperidin-1-yl}-methanone,

pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

66. The compound of claim 63, wherein X is COO.

67. The compound of claim 63, wherein X is SO_2.

68. The compound of claim 67, selected from the group consisting of methyl-propyl-{3-[1-(4-trifluoromethyl-benzenesulfonyl)-piperidin-4-yl]-prop-2-ynyl}-amine, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

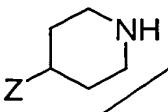
69. The compound of claim 67, selected from the group consisting of 2-(ethyl-{5-[1-(4-trifluoromethyl-benzenesulfonyl)-piperidin-4-yl]-pent-4-ynyl}-amino)-ethanol, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

70. The compound of claim 67, selected from the group consisting of 2-(ethyl-{4-[1-(4-trifluoromethyl-benzenesulfonyl)-piperidin-4-yl]-but-3-ynyl}-amino)-ethanol, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

71. The compound of claim 67, selected from the group consisting of ethyl-(2-methoxy-ethyl)-{4-[1-(4-trifluoromethyl-benzenesulfonyl)-piperidin-4-yl]-but-3-ynyl}-amine, pharmaceutically acceptable salts thereof and pharmaceutically acceptable esters thereof.

72. The compound of claim 63, wherein X is SO_2NH.

73. A process for the manufacture of compounds according to claim 1, which process comprises reacting a compound of formula (II)



(II)

wherein Z is $(A^1,A^2)N\text{-}C(A^3,A^4)\text{-}(CH_2)_m\text{-}V\text{-}(CH_2)_n\text{-}$, $X\text{-}CH_2\text{-}(CH_2)_m\text{-}V\text{-}(CH_2)_n\text{-}$, $HO(CH_2)_n\text{-}$, or $HOOC(CH_2)_n\text{-}$, wherein X is chlorine, bromine, iodine, methanesulfonyl, or toluenesulfonyl, and A^1, A^2, A^3, A^4, V, m and n are as defined in claim 1, with $ClSO_2\text{-}A^5$, $ClCOO\text{-}A^5$, $ClCSO\text{-}A^5$, $OCN\text{-}A^5$, $SCN\text{-}A^5$, $HOOC\text{-}A^5$, or $ClSO_2NR^1\text{-}A^5$, wherein A^5 is as defined in claim 1.

74. A pharmaceutical composition comprising a compound according to claim 1 and at least one of a pharmaceutically acceptable carrier or a pharmaceutically acceptable adjuvant.

75. A method for the treatment and/or prophylaxis of diseases which are associated with OSC such as hypercholesterolemia, hyperlipemia, arteriosclerosis, vascular diseases, mycoses, parasite infections, gallstones, tumors and/or hyperproliferative disorders, and/or treatment and/or prophylaxis of impaired glucose tolerance and diabetes, which method comprises administering a compound according to claim 1 to a human being or animal.

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